Generation of bile duct-competent transplantable human liver organoids

Grant Award Details

Generation of bile duct-competent transplantable human liver organoids

Grant Type: Inception - Discovery Stage Research Projects

Grant Number: DISC1-08792

Project Objective: To develop a human liver organoid culture system that overcomes current limitations of immaturity and a lack of biliary potential, thereby enabling potential therapies for liver deficiencies associated with bile duct insufficiency, particularly Alagille Syndrome.

Investigator:

Name:	Holger Willenbring
Institution:	University of California, San Francisco
Type:	PI

Disease Focus: Liver Disease, Metabolic Disorders

Human Stem Cell Use: iPS Cell

Award Value: $206,460

Status: Closed

Progress Reports

Reporting Period: Year 1

View Report

Grant Application Details

Application Title: Generation of bile duct-competent transplantable human liver organoids

Public Abstract:

Research Objective

Generation of human stem cell-derived mini livers capable of exporting bile into the gallbladder after transplantation into the liver

Impact

Mini livers capable of normal bile export would have potential for therapy of diseases in which bile export is impaired like Alagille syndrome

Major Proposed Activities

- Generation of mini livers using human stem cell-derived liver cells of different levels of maturity
- Identification of human stem cell-derived mini livers that are most effective in exporting bile into the gallbladder after transplantation into the livers of mice modeling Alagille syndrome
- Assessment and, if necessary, improvement of function, structure and growth of human stem cell-derived mini livers after transplantation into the livers of mice

Statement of Benefit to California:

Many citizens of the state of California are in need for liver transplantation because of liver diseases associated with impaired bile flow. Because donor livers are sparse, many of these patients die while waiting for liver transplantation. Our research may generate a therapy that stabilizes liver function until a donor liver becomes available or may avoid the need for liver transplantation.
